Year 12 Science: Photosynthesis and respiration in the cell

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. Where in the chloroplast are water molecules split?

2. A cell breaks down 5 glucose molecules. How many ATP can it make at most aerobically (38 per glucose), and how many anaerobically?

3. Besides ATP, what does anaerobic respiration make in yeast?

4. Doubling the light makes no difference to a plant's rate of photosynthesis, but adding carbon dioxide raises it. What was limiting?

5. A pondweed shoot gives off 72 bubbles in 4 minutes. What is the rate?

Exam-style question: tomatoes in a glasshouse

A grower in Pukekohe raises tomatoes in a glasshouse. On sunny days she pumps in extra carbon dioxide, raising it to 1000 parts per million; outside air has about 424 parts per million.

6. Write the word equation for photosynthesis and name the organelle where it happens.

7. Calculate how many times higher the carbon dioxide concentration is inside the glasshouse than outside.

8. Explain why the tomato plants photosynthesise faster at midday than at sunrise.

9. Discuss why the extra carbon dioxide raises the rate of photosynthesis on a bright summer day but makes little difference on a dull winter morning, and why letting the glasshouse overheat would lower the rate.

Fix the mistake

10. Correct this statement: "Plants photosynthesise, and animals respire."

11. Correct this statement: "Respiration makes energy."

12. Correct this statement: "The light-independent stage happens in the dark."

13. Correct this statement: "Anaerobic respiration happens in the mitochondria without oxygen."